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## If you get orders... Take 'em!

Giusti, James R.

Chief of Naval Operations

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Vice Admiral John W. Nyquist  
Assistant Chief of Naval Operations  
(Surface Warfare)

**SURFACE WARFARE** is the professional magazine of the Surface Warfare community. Its mission is to further the objectives of the Chief of Naval Operations by disseminating information to the Surface Warfare community which will increase professionalism, improve readiness and sustainability, augment retention and enhance a sense of community identity and respect.

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# Surface Warfare

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**FRONT COVER:** *Wasp Sails Again* — USS *Wasp* (LHD 1), lead ship in the Navy's newest class of multipurpose amphibious assault ships, joined the surface Navy on 29 July 1989 when she was commissioned in Norfolk. The *Wasp*-class amphib is designed to embark, deploy and support all elements of a Marine landing from over-the-horizon using helicopters, Harriers and LCAC's. Article starts on page 2. Photo courtesy of Ingalls Shipbuilding.

**BACK COVER:** *50 Years On The 'Prairie'* — EM3(SW) Consuelo G. Bustamante hoists the "Don't Tread On Me" Navy jack on board USS *Prairie* (AD 15). The right to fly the jack belongs to the senior Navy ship in continuous service. Commissioned on 5 August 1940, *Prairie* has almost 50 years of continuous duty and 25 Western Pacific deployments behind her as the destroyer tender steams into the 1990's. Article starts on page 24. Photo by JOC(SW) James R. Giusti.



# 'If You Get Ore

By JOCS(SW) James R. Giusti

***"... When we remember that the naval officers are in control of such a complicated mechanism as a battleship it is easily understood that they must sooner or later be given opportunities for studying the advance topics in engineering such as wireless telegraph. . . ."***

**T**hat 1913 statement outlined the Navy's graduate education program for Naval officers when the pace of scientific and technological innovation increased dramatically with Marconi's invention of the "wireless" (radio), the Wright brother's historic aircraft flight and the record-setting world cruise of the steam-powered Great White Fleet.

Today the rate of technological change is even greater. Of all the military services, the Navy is the most hardware intensive. Its ability to capitalize on new technology is linked directly to the competency level of its people. Accordingly, the surface Navy needs its surface warfare officers to obtain a post-graduate education to better develop and incorporate new and emerging technologies in the three-dimensional arenas of UP, OUT and DOWN.

## **The Need — The Goal**

"Because we face ever increasing complexities in technological, managerial and political/economic fields which affect the Navy, we need officers with a solid intellectual capacity and the vision to capitalize on evolving technology, and developments," said ADM Carlisle A. H. Trost, CNO. "This requires officers capable of original thought and the capacity to synthesize

broad areas of knowledge, analyze complex issues, and appreciate the distinction between what is theoretically possible and actually achievable. Investment in graduate education must be pursued as a priority, even in the face of austerity and competing demands for our junior officers."

For the Navy, the Naval Postgraduate School (NPS), Monterey, Calif., provides a graduate education that enhances a SWO's professional career and fulfills the Navy's need for subspecialists — an element critical to building the operational, technical and managerial sophistication needed in the Navy's leadership.

"Recent changes in NPS's sponsor-driven naval engineering requirements reflect the changing technology of superconductivity, fiber optics, composite materials and electric propulsion — several of the cornerstone technologies necessary to bring the CNO's goal of electric drive for the next major surface combatant to fruition," said CDR Dennis Mahoney, NPS's Naval Engineering Programs curricular officer. "The pace that technology is expanding is incredible. Hopefully, SWO's won't need a Ph.D. to sail or command surface combatants. However, our big advantage over our potential adversaries is our technological edge. To maintain that edge the Navy needs educated officers who are discriminat-



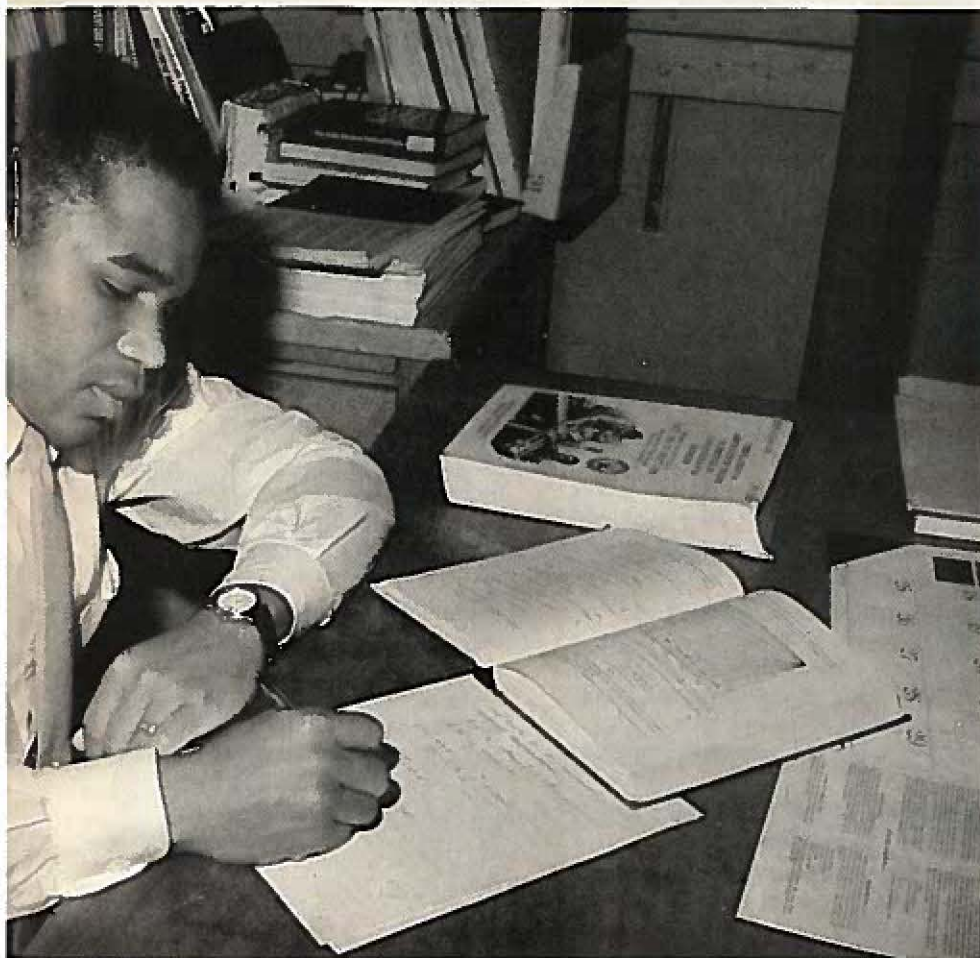
ing consumers and who can direct a contractor or development team in the right direction.

"Understanding fundamental technologies and being able to design or 'system engineer' a ship, including the weapons and communications systems, as we develop these new technologies is essential. That's why NPS is bold in structuring its programs with a vision that focuses on the future and the leadership needed to build the Navy of the 21st Century."

From its original focus on marine engineering, the school today offers 31 advanced programs that include such topics as mechanical



# ders . . .



LT Gerald M. Lewis, a naval engineering student — *"A SWO should expect to be academically challenged and come here with a desire to work hard — not just punch his advancement ticket."* Photo by JOCS(SW) James R. Giusti.

# Take 'Em!'

## Naval Postgraduate School, Monterey

and electrical engineering, operations research, computer science, electronics and communications, antisubmarine and electronic warfare, weapons system engineering air-ocean sciences, joint C<sup>3</sup>, space

and astronautics, national security affairs and administrative sciences.

"PG school adds combat effectiveness to the Navy by honing the future professional performance of its officers," said RADM Robert C.

Austin, NPS Superintendent. "Our students combine their surface warfare experience gained at sea with insight gained through postgraduate studies to meet the challenges of tomorrow's surface Navy and the needs for the nation's security."

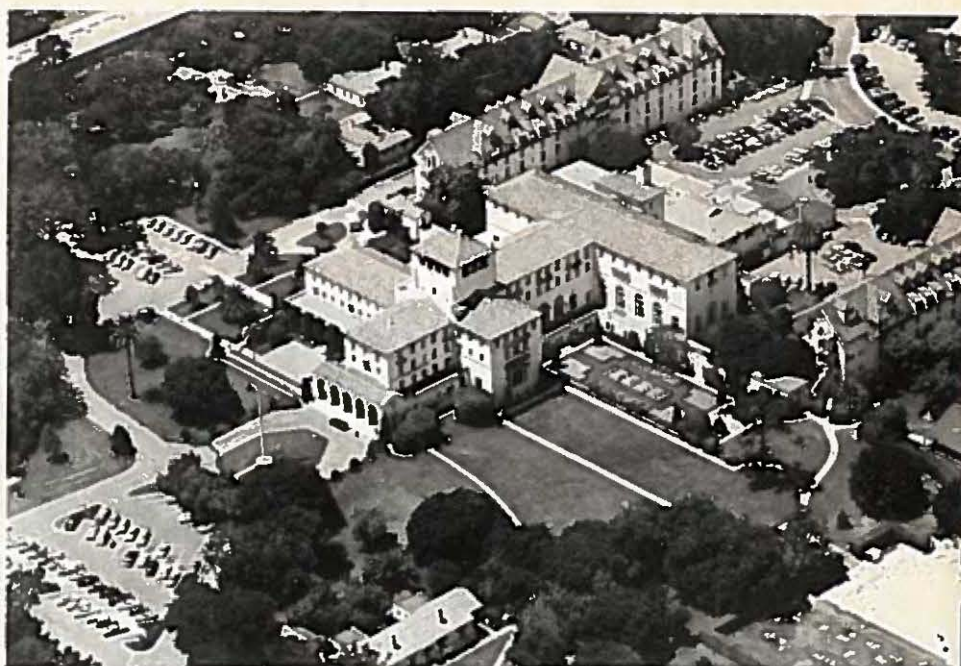
Under the fully-funded graduate education program, 80% of the Navy's graduate students study at Monterey, with the remainder, mostly restricted line and staff corps officer, enrolled in 52 U.S. universities. Officers of Navy, Marine Corps, Army, Air Force and Coast Guard, as well as U.S. government civilians and officers from 27 friendly countries attend NPS full time.

"Graduate education at NPS is a marvelous opportunity for officers to really stretch themselves to the horizons — academically — and understand the technology that's on the cutting edge," added CDR Mahoney. "And the Navy pays you to learn and improve yourself — to become a critical thinker and leader."

Currently, the CNO's goal is to



An aerial view of Herrmann Hall at Naval Postgraduate School, Monterey. USN Photo.



have 20% of the Navy's officer corps receive a graduate education. PG school quotas for SWO's are 80% in the technical curriculum, 15% in the management sciences and 5% in the political sciences. NPS confers Ph.D., M.A., M.S. and engineering degrees in more than 40 programs, administered by 11 curriculum officers. Approximately 900 students graduate with a degree annually from this nationally and internationally recognized school. Guided by a unique faculty drawn from the nation's most prestigious universities and government laboratories, officers gain valuable knowledge to enhance their military prowess while earning graduate degrees. And faculty members themselves, together with the students, are able to apply their research to critical Navy technologies, producing an important domain of scientific expertise found nowhere else in the world.

of the senior officers' NPS experience. The CO, XO and several department heads all had postgraduate education. They were equipped to handle situations and solve complex problems that require thorough working knowledge of the systems we now have."

"On my last ship 50% of the officers had postgraduate education.

logistic student off USS W. S. Sims (FF 1059). "A Naval officer needs the ability to use the war-fighting tools available to his best advantage. The tools we have today are very complex and to effectively use them as a leader you must understand their technology."

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### ***"A junior officer should start thinking about getting a postgraduate education after qualifying as as SWO."***

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#### **Why Attend PG School?**

Surface warfare officers selected for graduate education are those who have shown the potential to serve ultimately in high level command and responsible subspecialty assignments. These candidates are successful performers in their warfare specialty and have the requisite academic background.

LT Earl Goodson, a weapon's engineering student, chose the postgraduate education at NPS because of his shipboard experience in USS Elrod (FFG 55). "Everything at the department level worked very smoothly and it was a direct result

Compared to other officers, they were by far a more professional group," added LT Gerald M Lewis, a naval engineering student from USS Antietam (CG 54). "I requested postgraduate education because it's a great opportunity and a real challenge. A SWO should expect to be academically challenged and come here with a desire to work hard — not just punch his advancement ticket. Sometimes I feel I'm still at sea."

"My XO graduated from NPS. His advice was 'if the Navy offers you orders to Monterey in any curricula, take them,' and I did," said LT Alan Ariel, an operations

#### **Selection to Monterey**

Officers normally receive subspecialty graduate education during the first half of their career and are usually department head selected. Unrestricted line officers being considered by the selection board for promotion to LT or LCDR are also considered for selection for postgraduate education. Commander, Naval Military Personnel Command (NMPC), convenes a formal selection board twice a year in conjunction with the LCDR and LT promotion boards to choose candidates based on their demonstrated professional performance in their warfare specialty.

"A junior officer should start thinking about getting a postgraduate education after qualifying as a SWO," advised LCDR Roger Stemp, NPS's operational analysis curricular officer. "PG school should be a conscious decision made early in an officer's career so he or she can map out a good period careerwise



to attend school."

Most SWO's will attend PG school just before going to department head school and a follow-on department head tour.

The evaluation process for all naval officers begins during the first year following their commissioning. The school's admissions department automatically reviews each officer's undergraduate record and condenses all pertinent academic information into an Academic Profile Code (APC). The three independent digits reflect an officer's overall academic performance, exposure to/performance in calculus or pre-calculus mathematics and

Christmas and one during June-July. Direct entry dates vary with curriculum, but an officer can enter via a refresher program any quarter. Officers attending Monterey must obligate to service three years for the first year of graduate study and on a "one-for-one" basis for every additional month of school.

The institution takes into account that an officer has been away from academic environment for some time. The majority of the incoming officers require or desire one or two quarters of preparatory work while an additional 15% complete off-duty courses prior to arrival.

families and have been selected for their future leadership potential, and sends them through a post-graduate program with a thesis in a finite time frame with a 93% success rate. Most universities in the U.S. have about a 50% success rate. The whole process is designed for the student to succeed in obtaining his subspecialty education. In the process, the officer obtains more than enough credits to earn a postgraduate degree."

"We developed an individual plan tailored to an officer's capability for doing graduate work," added CAPT Hillar Sarepera, NPS's Director of Programs. "An academic program is designed for each student based on his or her capabilities and the demands of the curriculum he or she is entering. If needed, we give officer students a refresher semester or two at the beginning to bring their academic abilities up to speed and provide them a firm basis upon which to build a graduate education. Once into the program, course work is carefully scheduled to optimize the officers academic experience. The bottom line is that we design and closely monitor each officer's program and its prerequisites to assist each officer in realizing the maximum of his or her abilities."

"The evidence says we do that extremely well," added Dr. Shull. "We take in about 1% of the Navy's officer corps each year and by the time they reach flag rank more than 50% of the admirals are graduates of NPS."

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***"We take in about 1% of the Navy's officer corps each year and by the time they reach flag rank more than 50% of the admirals are graduates of NPS."***

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exposure to/performance in selected science/engineering areas. (See example on page 21) If eligible for PG school, officers are informed of their APC and the graduate programs for which they are eligible. Eligibility for a specific curriculum is based on a specified threshold APC and an officer's undergraduate work.

#### **Returning To Academics**

NPS students range in rank from LTJG to CDR but are predominately LT's with about four years of service, who report to NPS usually following their initial sea tour.

The PG School operates under a quarter system with each term of instruction lasting 12 weeks. The last week of each quarter is set aside for examinations. In addition, there are two two-week recesses during the academic year, one over

"The main reason we are here is not to give degrees, but to educate Naval officers in the subspecialties the Navy needs," said Dr. Harrison Shull, NPS's Provost and Academic Dean. "We are in the business of providing an officer with a solid background of technological information and refining his or her problem solving techniques so that a graduate education will last him or her a lifetime. The school takes good-average college graduates from all over the country, who have been to sea, some who have

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Officer students in air-ocean science curriculum discuss course material during a class break. USN Photo.





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**“... a graduate education will last . . . a lifetime.”**

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### **Earning A Subspecialty**

Each of NPS's study programs leads to a specific subspecialty ("P") code that identifies an officer's skill and assignment process. The Navy recognizes more than 6500 billets requiring P-coded subspecialist officers. Upon completion of the required curriculum — which varies from 18 to 27 months, depending on the subspecialty field — officers graduate and are recommended for a subspecialty designation in their area of expertise.

When the Navy finances an officer's postgraduate education, it expects a return on the investment through what has come to be called a "utilization" tour. NMPC's Professional Development Education and Subspecialty Management Branch (NMPC 440) monitors the assignment of every subspecialty-coded officer and ensures that assignment officers fully utilize subspecialists based on the available billets. Most billets coded for subspecialists are shore duty assignments, but there are a number of subspecialty codes at sea.

Unrestricted line officers are normally assigned sea duty after NPS to further develop their warfare specialty. If sea duty billets exist in their subspecialty, they can be as-

signed to such billets, otherwise they can expect assignment to subspecialty-coded billets on subsequent shore duty tours but not later than the second tour following graduation.

Postgraduate school is a unique opportunity for officers to specialize in an area and upgrade their capabilities and credentials. However, the decisions to pursue an area should be well considered and be in a field an officer really wants. Postgraduate school does effect an officer's detailing because subspecialty utilization is tightly controlled. PG school is not just an advance degree to bank until retirement — the Navy must eventually reap the dividends from that investment.

All naval officers serve one tour in a validated subspecialty position before earning the proven subspecialty code. SWO's with subspecialty codes will serve at least two tours in related subspecialty billets — successfully completing a subspecialty tour is an important indicator of potential for higher rank.

### **Promotion Opportunities**

Officers should recognize that problems can be encountered in managing two careers — as a surface warfare officer and as a proven subspecialist. Sometimes, for ex-

ample, the timing of an officer's rotation and subspecialty billet openings do not coincide. Likewise, there may be a high priority "fill" requiring expertise in an officer's warfare specialty.

Qualification in a warfare specialty is the foundation on which each officer establishes further growth. Certain milestones reflect achievement of managerial and leadership competence which enhance promotion opportunities. While no single criteria such as a graduate degree or a particular subspecialty can guarantee success in the surface Navy, a blending of these and other traditional SWO career elements characterizes the career pattern of officers who have contributed to the dynamic needs of the Navy and the surface warfare community.

"Obtaining a postgraduate education is much more than ticket punching," explained CAPT Sarepera. "Officers succeed in their subsequent careers more easily because the education received includes a thorough understanding of basic principles and practice in the application of those principles to defense related problems, enabling officers to perform better in all of their succeeding assignments. When the Navy puts the investment of a postgraduate education into an officer, he or she becomes more valuable to that organization. Ultimately when that officer gets to the grade of commander, a greater percentage of his or her career will be spent in his or her subspecialty. A firm anchoring of that subspecialty in postgraduate education gives both the officer and the Navy a significant advantage."

### **Refining Naval Leadership**

More than anything else, postgraduate school teaches junior officers how to approach problem solving logically, a skill which will serve them well in any billet — afloat or ashore. Training SWO's to understand technical problems is essential because they are the naval officers who will influence the design of ships and weapons systems through their education and operational experience.

## **Attending PG School**

SWO's interested in attending one of the curricula offered at NPS should read OPNAVINST 1520.23 and the latest OPNAVNOTE 1520 for guidance, information and policy for the Navy's graduate education program.

Officers can also write the Director Of Admissions, Code 0145, Naval Postgraduate School, Monterey, Calif. 93943, or telephone — Commercial: (408) 646-3093 or Autovon: 878-3093

At NMPC, the Navy's postgraduate education program is managed using an annual quota plan, broken down by curriculum and community by NMPC Code 440B — Commercial: (202) 694-3321 or Autovon: 224-3321. Call your detailee to get the quota you desire.



"When an officer faces uncertainty, the true value of a postgraduate education materializes," said Professor Turgut Sarpkaya, an internationally-renowned fluid dynamics pioneer at NPS. "The rigors of the thesis process develops new analytical insight and skills for officers to carry throughout their career. For, once they return to the Navy, they will face many situations that require creative thinking for them to act safely and economically. The most important part of PG school is to take a young officer and his mind and somehow carry them through that invisible ocean of inspiration so that when he experiences a problem as a naval officer he can say, 'I know how to think creatively, calmly and with wisdom.'"

#### PG Grads At Sea

Aboard USS *Fitch* (FFG 34), SWO's with NPS's postgraduate education are better leaders and better surface warriors. "Right after PG school I went to department head school and then reported aboard *Fitch*," said LT Edward L. Brownlee, *Fitch*'s Engineering Officer "That education helped me excel and enhanced my professional outlook both as an officer and as a sailor."

"PG school is one of the best kept secrets and one of the greatest opportunities in the Navy," said LCDR Larry Watson, *Fitch*'s XO. "It's an opportunity to interact with officers from all the warfare specialties and learn how they operate. My time at NPS helped prepare me for my XO tour and the day-to-day problems that I face. The management techniques I learned have helped me become a better XO. Getting that postgraduate education is a self-confidence builder."

"PG school elevates an officer to a higher intellectual level," said LT Thomas K. Bennett, *Fitch*'s Combat Systems Department Head. "I am more knowledgeable about our combat systems and the technology involved because of my postgraduate education. That allows me to better employ my people. They spend their time more

## What Your APC Means

The Academic Profile Code (APC) is a three-digit code which summarizes pertinent portions of an officer's prior college performance. The three independent digits reflect an individual's cumulative grade-point average, exposure to and performance in calculus-related mathematics courses and exposure to and performance in selected science and engineering areas. With 0 being the highest, the grade-point code and technical code are rated 0 to 5 while the mathematics code is rated 0 to 6.

Each curriculum at NPS has a specified threshold APC for admission. They usually range between 323 to 365. An APC of 323, for example, which is the threshold for the Naval/Mechanical Engineering curriculum, indicates a total grade average for all college courses in the interval 2.20 to 2.59, a calculus sequence completed with average between C-plus and B, and a completed calculus-based physics sequence with average between C-plus and B. OPNAVNOTE 1520 and the NPS catalog give detailed explanation of APC computation.

Officers with deficient APC's may qualify for entry into a curricula by completing suitable courses from the NPS's Continuing Education Program or any accredited civilian college. Only courses with B or better grades are used to upgrade either a Math Code or a Tech Code. The APC must be improved prior to entry into NPS, as the technical refresher (Engineering Science (460)) relaxes the APC requirement for entry into a technical curriculum but does not improve it.

effectively ensuring the ship's combat readiness is maintained instead of educating me on the systems."

"It is critically important for junior officers to attend PG school," added CDR Gary A. Storm, *Fitch*'s CO. "PG school not only helps an officer professionally but in the end helps the ship. The two department heads on board who have a postgraduate education are my strongest officers by a long shot. They stand a cut above the others — they are more mature and view things in a broader perspective. PG school helps an officer become a better leader and a better surface warrior."

#### The Surface Navy's Future

In a world of increasing complexity and employment of weapons systems, electronics, computers, communications and even geopolitical relationships, there is a need for well-educated naval officers who can successfully deal with both today's and tomorrow's challenges.

"The Navy's demand for technically proficient managers and lead-

ers is higher today than ever. How well we manage our resources and draw from existing technology decides how good tomorrow's Navy will be," said VADM John W. Nyquist, ACNO for Surface Warfare and a 1963 NPS graduate in ordnance engineering. "JO's in the surface Navy must learn to use technology to the Navy's and the nation's best advantage in building future surface combatants and in commanding and fighting the ones we have. We face a potential enemy whose application of technology is threatening to overtake us."

"Postgraduate education is a strategic investment in the future of the Navy and the nation. The junior officers now attending PG school will one day occupy my job and other positions of principal responsibility. Their contributions across the full warfare and acquisition spectrum will decide how ships must be built and fought in terms of strategy and capability. It is about building and commanding the Navy of the 21st Century."

